Summary
Steller Sea Lion Recovery Team Meeting
Hotel Captain Cook, Anchorage, AK
21-22 March 2002

Bob Small, chair of the Steller Sea Lion Recovery Team (RT), opened the meeting at 13:00 on March 21 by thanking Lowell Fritz for his efforts to organize the research review meetings earlier in the week. Minutes from the January meeting were reviewed and approved with minor changes. Shane Capron distributed and reviewed changes made to the draft Terms of Reference that incorporate changes suggested by the RT at its last meeting. The RT had no additional comments on the revised Terms of Reference.

<u>Overview of recovery units</u>
Lianna Jack, Alaska Sea Otter and Steller Sea Lion Commission

Lianna Jack presented the subcommittee report on recovery units; subcommittee members Susan Pultz and Shannon Atkinson participated via telephone. Pages 4-36 of the Final ESA Section 7 Handbook states that jeopardy may be based on recovery units (RUs) when documented as necessary to survival of the species. An action that impairs or precludes the capability of a RU from providing its survival function may represent jeopardy. The subcommittee reviewed three final Recovery Plans (RPs) and three draft RPs to evaluate prior use of this construct. Final RPs were for the Atlantic Coast piping plover, the marbled murrelet, and the Peninsular bighorn sheep; draft plans were for the bull trout, the California red legged frog, and the Pacific Western snowy plover. RUs were most commonly used in these plans to maintain the distribution of the range, distribute population increases throughout the range, facilitate genetic interchange, maintain genetic fitness and productivity, and enhance long-term survival. Other reasons cited included promotion of site recolonization and reduction of survival and productivity variance. RUs were generally defined on a biological basis (commonly genetic flow), physical characteristics (e.g., isolated basins, major river or watershed boundaries), maintenance of range herd memory, or current habitat distribution. Other considerations included connectivity among ewes, jurisdictional and logistical concerns, political (i.e., international) boundaries, similarities of threats or concerns, and the need to make each RU sufficiently large to buffer overall carrying capacity. Advantages attributed to RUs included maintenance of adaptive ability through genetic and phenotypic diversity, a reduction in the vulnerability of slow-growing species, and a focus on long term planning for old growth nesting species. RUs were used to encourage plan implementation by local interests, and geopolitical boundaries were used to allow state management. They were used to manage threats differently in different areas, and to facilitate focused habitat management. Widely distributed species were put on smaller spatial scales for easier management and planning, and impacts were evaluated at several scales (e.g., within parks, within zones, overall). RUs were distinguished from management units by the consequences of their loss; loss of a RU would be critical to the survival of a species (e.g., through loss of species diversity) while loss of a management unit would not be as significant.

Other subjects developed through RT questions included the following:

- Members of the RT questioned whether NMFS had used RUs in any of its salmon or monk seal plans. Although the monk seal team was reportedly looking at RUs, the construct has not been used in prior NMFS plans and all examples are recent. The Evolutionary Significant Units used in salmon plans may be somewhat comparable.
- RUs are often defined on a genetic basis, but it may depend on how the RT defines recovery. It may not require a genetic analysis to demonstrate that a population cannot exist throughout only a portion of its range and still maintain its adaptability and genetic diversity. RUs can also be used to maintain historical distribution.
- A federal action that impacts only a single RU would be evaluated based on its impact on that RU and not against the species as a whole. In a wide-ranging species, for example, loss of a large portion of the range may not jeopardize survival of the species but managers may be unwilling to accept such a loss.
- It is not necessary to establish RUs in order to designate areas as important or implement finer spatial actions, but establishing RUs would affect how NMFS manages the species and conducts ESA Section 7 consultations. Consultations are facilitated in cases where an action impacts a specific area and may not constitute jeopardy to the species as a whole. In these cases a RT has already identified the level of vulnerability and distribution it wants, and it is unnecessary for the agency to argue the importance of this portion of the population.
- In order to address population expansions and contractions in the RU construct, subcommittee members recommended making RUs sufficiently large to accommodate natural population fluctuations.
- The term "Recovery Unit" is still appropriate in cases where a population has not yet entered its recovery phase. RT members were counseled to focus on recovery as a long-term objective.
- RUs were described as independent from the delisting process. RUs could be identified when areas (particularly small ones) required different management even though they were not genetically independent. The delisting process looks at the species as a whole. Once RUs have been identified, however, all must be recovered in order for the species to be delisted. Since the RUs have been identified as essential to the survival of the species, it is inappropriate to set delisting criteria that provide for recovery of only a portion (e.g., five of seven) of those RUs. Such a standard might be appropriate for management units or populations rather than RUs. The standards for what constitutes "recovery" could be different for each RU.
- No cases were identified in which a RT considered and rejected the use of a RU. In their current form RUs are a relatively new construct. The term "Recovery Unit" has been used with a different meaning in some earlier plans, but those plans are being revised to comply with the current usage of the term.
- Subcommittee members did not know whether the advantages of RUs had ever been realized or were just projected. The information contained in their report came from the plans themselves. Since those plans were often so new, there was no information available on whether RUs proved to be effective.

<u>Overview of population structure (i.e., stocks, DPS) relative to recovery plans</u>
Barbara Taylor, NMFS

It is important for the RT to establish its population structure terminology early on. Some of the potential for confusion results from the two acts affecting SSL: the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). The ESA adopts an "emergency room" philosophy to prevent extinction, while the MMPA is a maintenance program to sustain healthy populations. The ESA maintains evolutionary potential through collections known as Distinct Population Segments (DPSs). The term "stock" is specific to management objectives and is not often used in context of the ESA; however, the MMPA maintains population stocks as functioning elements of the ecosystem. In a DPS, the genetic differences are "marked", local adaptations are plausible, and phylogeographic differences are likely. Under the MMPA, stocks are defined by rates of dispersal that are trivial to population dynamics (generally less than a few tenths of a percent per year).

For the ESA listing of SSL, both levels of population structure are important. The two DPSs are managed separately, can be listed or downlisted separately, and are each worthy of protection as a full species. Stocks are not trivial, however, and represent demographically independent units that are used in population dynamics models. For this RT, DPSs are predefined (i.e., Eastern and Western); any RUs will require further definition (e.g., Asian vs. Central Alaskan). Stocks define the dynamics of metapopulations within either a DPS or a RU. Spatial structure is an important element in the development of recovery criteria, since most people recognize that the risk of extinction is related to range size (i.e., a large range reduces the chances for catastrophe due to a single event). The form of these recovery criteria often refers to a number of populations (e.g., five of seven) that must be maintained in order to avoid correlated events. Metapopulation dynamics within a DPS can strongly influence estimates of risk (e.g., source/sink dynamics, Alee effects, etc.).

Other subjects developed through RT questions included the following:

- Management units could be important in understanding the risks faced by SSL, since units could be experiencing different levels of risk.
- DPSs represent units that have been split off for thousands of years with no gene flow.
- A major difference between a RU and a stock are that stocks are not necessary to the survival of a species while a RU is a "kingpin" ---- if it falls then there is the potential for the entire species to fall as well. The use of RUs allows recognition of the importance of metapopulation dynamics.
- RT members asked for examples of such "kingpin" populations in marine mammals. Such a condition was thought to exist for monk seals (i.e., at French Frigate Shoals) but recent information has shown that not to be the case. It could possibly be the case for populations of the extinct Bering sea cow, and may also be the case for large whales where important population segments were reduced and the species have not recovered.

<u>SSL genetics research</u>
John Bickham, Texas A&M University

Bickam's laboratory at TAMU is one of several doing genetics work on SSL. His work focuses at the level of rookeries and at the level of regions. As a subject animal, SSL are characterized by a broad range (i.e., the Sea of Ohutsk to southern California) and a high degree of fidelity to rookeries. Of the approximately 50 known SSL rookeries, his team has sampled 80-85%. Research into mitochondrial DNA (mtDNA) investigates phylogeography and population structures based on region and Cytochrome b sequences, the origin of hunter-killed animals in the Pribilof Islands, and the stock origins and movements of yearlings from the Prince William Sound and Southeast regions of Alaska. Microsatellite analyses include a geographic survey of rookeries using six polymorphic loci, and the development and testing of new markers. Work with other markers includes a search for markers linked to the X-Y chromosomes.

Mitochondrial DNA is maternally linked and the genetic diversity is high among SSL (0.8 or more in each of the identified regions). After examining more than 1,250 individual SSL Bickham's laboratory has identified 122 haplotypes, many of which are identified in only one or two individuals. This pattern is typical of an expanding population from an evolutionary perspective (i.e., the genetic tree shows little evidence of "pruning"). This pattern is characterized by many gene mutations that do not disappear from the population. If there have been genetic losses due to natural fluctuations in the past, then those types of events have caused little loss of diversity. Similarly, current bottlenecks have not reached that level of loss. These levels of diversity are many thousands of years old.

When looking at the geographic distribution of these genetic markers, many haplotypes show a "normal" distribution from west to east, suggesting a point of origin at the mode of the range. There is another group of haplotypes that is found only in the Eastern DPS, however, suggesting that there is almost no effective exchange (i.e., involving successful reproduction) of female individuals from east to west. Two other haplotypes (BB and A) show yet another pattern and are distributed across the range of the species and in different amounts in each area. If due to movement, such a pattern would suggest movement across the range. However, these could also represent plesiomorphic haplotypes that were distributed across the ancestral SSL population before the Eastern-Western division occurred. Further analysis lends support to the primitive ancestral hypothesis since the A and BB haplotypes are related by a single base pair change with the A haplotype giving rise to one segment of the genetic tree and the BB haplotype giving rise to another. Genetic analysis shows that the three Asian SSL rookeries are distinctly different from those in Central Alaska, that the Central Alaska rookeries are all closely related to each other, and that the Southeast Alaska rookeries are all related to each other but are still genetically diverse.

Evidence from nuclear DNA gives researchers an idea of male SSL activity, since the genetic trees at each rookery show no structural isolation. This pattern can be explained by (1) extensive male dispersal, even between regions, or (2) more rapid divergence of mitochondrial DNA than nuclear DNA. Since any individual has the potential to inherit any of four copies of nuclear DNA but only one copy of mtDNA, the population size for nuclear genes is four times larger. Prior to the last glaciation, ancestral SSL stocks may have been pushed into glacial refugia and started to diverge in isolation. This isolation may not have been sufficiently long to cause nuclear DNA divergence, but was sufficient to cause mtDNA divergence. Researchers are currently attempting to determine which of these theories are correct.

SSL genetics research, continued
Barbara Taylor, NMFS

Taylor reported on research into population structure using mtDNA that is being conducted jointly by the NMFS Southwest Fisheries Science Center, NMFS National Marine Mammal Laboratory, and Texas A&M University. One study was designed to estimate dispersal rates. Levels of genetic differentiation in large populations are expected to be low even when there are trivial rates of dispersal because abundance is high (i.e., it is easier for genetic drift to occur in a small population than in a larger one). The precision of dispersal estimates can be increased by increasing the length of mtDNA segments that are examined or by increasing sample size to increase statistical power. Their research indicated that there was a significant increase in statistical power when the segment length was increased from 238 base pairs (bp) to 514 bp. Statistical power was very low when sample sizes consisted of only 15 individuals, and increased when sample size was increased to 35 and to 55; a sample size of at lease 50 individuals was recommended.

A simulation model was developed to compare genetic patterns at the adjacent Akutan and Ugamak rookeries. Estimates of genetic differentiation were obtained at various rates of dispersal by providing an estimated dispersal rate, running the model for thousands of simulated years, and sampling the population periodically. The levels of genetic differentiation that have been observed at these rookeries are consistent with those that would be seen if approximately six of the 27,000 females moved between these rookeries per year. The population structures are distinct between these adjacent rookeries, and these represent trivial exchange rates.

Other subjects developed through RT questions included the following:

- RT members noted that evidence from branded animals suggests higher rates of dispersal on adjacent rookeries in Southeast Alaska. Taylor responded that harbor seals have shown different rates of dispersal in different parts of their range, so additional SSL genetic work is needed in areas where the results can be compared with branding data.

During RT discussion on March 22, it appeared that additional samples would be needed at some sites in order to distinguish Asian from Central Alaskan as a separate RU, and to get better estimates of dispersal rates across the range of SSL. Although work last year focused on only two sites, there are several sites that are already represented by 40+ samples, and should achieve the 50+ status recommended by Taylor after the coming field season. RT members recognized that permit issues sometimes represent a barrier to collecting large numbers of samples from pups.

The RT engaged in an extended discussion regarding the merits of collecting flipper punches from all SSL pups that are handled during the year. Hair samples are inadequate for genetics analysis because they complicate the extraction process (i.e., not as much DNA is obtained and the process is more labor intensive and costly) and the birth origin of scat samples is never certain. Skin samples (i.e., flipper punches) from pups are preferred because they are relatively easy to collect and process, and they provide additional archival material. The wounds reportedly seal quickly in captivity, but some RT members questioned whether the process occurred as rapidly in the wild. Some RT members maintained that handling for any purpose caused greater distress to the animals and that researchers should collect as much information as possible whenever an animal is handled. Others believed that there would be insufficient time to collect that much information from all pups handled and that overall sample sizes in other programs would ultimately suffer. Of major concern was the possibility that taking flipper punches from animals being branded for survival studies would somehow compromise those survival results. The RT considered taking samples from only unbranded animals, but this would require that a larger number of pups be affected at each site. The RT reached no firm conclusions on the issue, other than to recommend that alternative sources for genetics samples be explored to pursue progress on defining population structure. Some RT members requested that a table showing the number of genetics samples available from each site be prepared so that researchers could be aware of data gaps.

Use of PVA in developing recovery criteria
Dan Goodman, Montana State University

While every RP is required to include recovery criteria, other legal criteria are minimal. Listing criteria include habitat destruction (actual or threatened), over utilization, predation and disease, inadequacy of the existing regulatory structure, or other factors. Using these factors species are classified as either Endangered (likely to go extinct) or Threatened (likely to become Endangered). Two traditions have evolved over the thirty years the ESA has been in existence to make status decisions: Population Viability Analysis (PVA) and the indicator checklist.

PVA arose because it took at face value the language in the ESA about the probability of extinction, and attempted to estimate this probability. Both a time horizon and a threshold probability must be specified in order to conduct the analysis. These selections are a matter of policy, but in recent years there has been convergence on time horizons of 100 years and threshold probabilities of a few percent. At a recent large whale workshop, participants recommended delisting criteria that used a 100-year time horizon and a threshold probability of 1%. The attraction of the PVA approach is that it is stated in the same terms as the ESA. Its difficulties lie in the fact that researchers do not really know the probability of extinction, and the technique itself is esoteric and difficult to explain.

Because of these difficulties, other groups have developed a variety of checklists for delisting that include characteristics like numbers of individuals, numbers of subpopulations, population trends, etc. Listings are based on the number of negative marks in these categories. The technique is practical, and if the standards are conservative enough it may eventually place a species in the same category as the quantitative methods. Experience suggests that checklists are less general and flexible than originally believed, that many checklists adequate for terrestrial animals work less well for aquatic species, and that the tool is generally not as powerful as is needed.

There is great uncertainty regarding the causes of SSL decline and the financial stakes associated with any decision are high. Any indicator must be conservative in order to deliver the same level of protection as quantitative methods due to the levels of uncertainty built into the estimates. The financial stakes motivate managers to reduce the levels of impact while still remaining faithful to the purpose of the Act. Goodman recommends use of the PVA tradition for SSL, believing that acceptable defaults can be generated to fill into the analysis when data gaps are encountered.

A PVA analysis could look just at probabilities of extinction, but other factors come into play when a population is very small and very sparse. These include Alee effects, which are essentially a form of reverse density dependence. Small populations may be more vulnerable to extermination by predators if those predators are able to switch between prey. Social or defensive behaviors may be affected by small population sizes, and genetic effects like inbreeding or genetic drift may be more pronounced. Managers are uncertain how important these factors are in most populations that are at low levels.

An ideal PVA would require information on (1) current population size, (2) present "average" demographic rates, (3) measures of environmental variation expressed in the same units as the demographics, and (4) density dependence and its influence on birth and/or death rates. The "average" demographics are age-specific birth and survival rates that would be developed during a period of about 10 years in which the environment has been stable or during which fluctuations can be accounted for. The measures of environmental variation include short-term (10-20 years) and long-term (e.g., decadal oscillation) scales. It is usually possible to develop #1 and #2 for well-studied populations, but obtaining information on #3 and #4 is generally difficult. Short-term variation is often confounded by measurement error and historical data are often not good enough to measure long-term parameters. Knowledge of density dependence is often better in cases where the population has been buffeted by harvest, because the data from populations that have not been harvested erratically are often confined to a narrow range or tend to be correlated with other environmental changes.

Unfortunately, there are no easy solutions to these problems and the analysis is sensitive to small differences. Several techniques that have been used to develop the needed information include paleoecology (to develop data from historical sources), meta-analysis (to bring in comparative data when information is thin), and the adoption of conventions when all else fails.

The good news is that even given their problems, models are useful things to develop. They can help when making management decisions and can also help to synthesize information so researchers see how it all fits together and can identify data gaps. They can be used to assess potential impacts of short-term management decisions, and can be the basis for long-term decisions in the ESA arena. They can help to define scenarios or research that is worth pursuing, or suggest management options that might not have been considered.

Goodman suggested that the RT push PVA analysis as far as possible, and then consider workshop and/or convention agreements when research data run out. When developing recovery criteria, the RT must first decide on the time frame and probability of extinction that it wishes to use. It should then explore modeling options using existing data and use those results for management and to define experiments. Lastly, the RT should use the models to identify scenarios that satisfy the objectives defined by the time frame and extinction probability (e.g., what total population size is needed, how should it be distributed, etc.). The model will provide justification for any quantitative standards that may be established.

Other subjects developed through RT questions included the following:

- Sensitivity analysis can be used on PVA to learn which factors are the most sensitive to variation and to identify productive areas for research. The results of a sensitivity analysis should not affect the PVA conclusions, since a measure of uncertainty should already be built into the analysis.
- The measures of a good model are consistency with the data, a construction that includes all the important factors, and a construction that includes enough leeway to deal with uncertainty.
- As modelers gain experience with PVA they have learned not to over-interpret the last 10 years of data and have gained a greater appreciation of natural variation over long time scales. There has been a tendency for modelers to build triggers that are too sensitive to the last two or three years of data. This is generally too short a time to establish a trend, and managers must be cautious not to overreact to either good or bad news. The model itself could be used to test the decision rules and their sensitivity to short term trends.
- Even though there is uncertainty associated with three of the four data elements required for PVA analysis, there are generally no other models that could replace it or be of greater use. One great advantage the SSLRT has is that of time. There are currently 30,000+ SSL and the RT will gain additional information with time and many of the data gaps will be filled. It is unlikely that the status of SSL will change that much in the next decade without researchers being aware of it. Time gives the RT the option to conduct management experiments that have been neglected to date.
- Development of a PVA in the context of revising the RP could start right away by developing a conservative default or simple PVA. Time will probably show that the recovery criteria developed using this model are indeed conservative and can be relaxed.
- Asymmetric criteria could be developed to prevent frequent status changes caused by natural fluctuations in a population on the cusp of a listing/delisting standard. These criteria make the delisting process less likely, so that the population is well above the listing standard before delisting occurs.

<u>‘Recovery’: definitions and implementation</u>
Kate Wynne, University of Alaska, Kodiak

The most common thread in recovery definitions is that the species is removed from the list. There are no concise definitions in NMFS recovery plans, and recovery criteria tend to be species- or stock-specific. In some cases they may discuss removing or neutralizing threats, or reducing human effects. Those in which historical population data are lacking (e.g., humpback whale) may not provide a definition of recovery but instead rely on interim goals for population numbers (i.e., increase the population relative to its current size over a specified period).

RT discussions focused on the lack of a biological definition for what constitutes a self-sustaining population. The PVA concept of “viability” refers to a certain number of animals remaining after a specified number of years. There have been attempts in the past to find a magic population number based on genetics (e.g., 500 animals) but researchers are less confident of those estimates at this time. Those estimates may represent a minimum population rather than a healthy, self-sustaining one. By some definitions self-sustaining implies stable or increasing, but the fact that some populations (e.g., rabbits) increase or decrease may have no relation to whether they are stable or self-sustaining.

Overview of recovery criteria – Subcommittee report
Bob Small, Alaska Department of Fish and Game

The subcommittee on recovery criteria did not discuss any issues that were not covered in the earlier comprehensive presentation by Goodman, and acknowledged that most groups are using PVA or "binned" categories. During RT discussion, some members suggested looking at alternatives to PVA. They were troubled that PVA bases long-term projections on short-term trends, and realistic assessment of uncertainty makes it difficult to rely just on PVA. While much current literature recognizes the weaknesses of PVA, however, the technique is still in use. Goodman recommended a combination of the PVA and checklist approaches; the RT must decide how the technique can be of use to reveal something about SSL populations.

The RT generally favored having several models in development and available for comparison. Modelers often use different structural approaches even though they use the same count data and choices for variable values. By posing similar questions to these models and comparing the answers the RT hopes to gain some understanding of the weaknesses of each approach. A. York was reported to be revising her earlier PVA analysis focusing on the Alaska portion of the Western DPS, and the RT asked that she be requested to complete that update prior to her retirement in December. In addition, the principal components of a model that A. Winship is currently developing should be relatively complete within a few months. The RT requested that D. Goodman be contracted to construct a third model.

To guide the modelers, the RT was asked to identify the time frame and recovery probability, describe a variety of scenarios that it might like to test (e.g., changes in density dependence, productivity, population size, etc.), specify the unit of comparison that each model should generate, and describe the basis upon which the models will be compared. The previous recovery criteria subcommittee members (Eggers, Hanson, Parker, Small, Trites) along with Fritz and consultation from Loughlin were assigned to this task. The subcommittee will outline a series of recommendations that will be brought before the entire committee for discussion. The subcommittee hopes to have its draft available to the full RT for review and comment prior to the next meeting, and RT members were encouraged to provide feedback via email at any time. Loughlin recommended that the subcommittee be briefed on a recent Holmes and York paper on the ratio of pups/subadults/adults in declining areas versus other areas. Payne offered the assistance of NFMS staff in summarizing the recovery criteria listed in other plans.

Review of 1997 SSL listing package
Shane Capron, NMFS

Capron reviewed the five listing factors from the ESA (habitat destruction, over utilization, predation and disease, inadequacy of the existing regulatory structure, or other factors). He stated his intent to post all such background materials in a single place on the NFMS Alaska Region website.

Progress on drafts of recovery plan sections III, IV, V.A-B and VI.A-B
Tom Loughlin, NMFS

Background materials have been collected. L. Lowry has completed drafts of the designated portions of sections II, IV, and V and distributed them to the subcommittee for review. Comments on the draft to date have been supportive, and the major issues are whether additional materials should be added. The subcommittee currently plans to meet in Seattle on April 30-May 1 to review the draft as a group. A completed draft should be available to the full RT by mid-May. The subcommittee will transmit its draft to Small, who will hold it until it can be assembled with other parts of the RP. The RT agreed that the RP would be transmitted to NMFS as a complete package and not as individual sections.

Develop strategy for drafting recovery plan sections V.C-D and VI.C-D, VII, and VIII

Since a recovery strategy depends on the limiting factors affecting a population, and since there appears to be no consensus on the limiting factors affecting SSL, some RT members suggested that possibly additional information is needed. They noted that the previous team initiated its series of workshops as the first phase of a RP revision, hoping to bring understanding of current research findings to a more common level. Workshops or an extensive reading list could be used to help current RT members become familiar with research that has taken place in the 3-4 years since the last workshops were held. Other team members noted that the RT has little time available to organize another series of workshops. They observed that the previous RT provided time for research briefings at the start of each meeting and suggested there might be value in reviving the practice. They believed that it is easier to present information in informal briefings than to prepare formal papers for presentation in a workshop setting. Relevant documents could be made available to the team, and experts could be brought in to brief the RT on issues where there is substantial uncertainty.

Several team members were particularly concerned with integration of the most recent telemetry data as a way to identify the habitat that is essential to SSL. They believed that habitat information is important because NMFS has focused its SSL recovery efforts on fishery management, and appears to base its management actions on the premise that competition for prey has been responsible for the decline of SSL. The agency had stated it would not revise its Critical Habitat designations until the RT completes its review. RT members were interested in telemetry and other habitat issues because of the underlying uncertainty in these data and the potential costs to industry in their interpretation. For these reasons, those members believed that the RP needs to include the best information on where SSL, its prey, and potential competitors overlap. They maintained that the RT could take different approaches to looking at available data (e.g., home range analyses that explore how ranges change as an animal ages). Current RT interpretations of those data may not be the same as those presented in the Biological Opinion, and the RT might make different recommendations depending on how it views SSL use of habitat. Other RT members maintained that the background sections currently in preparation would not include any new or novel information that has not already been presented in either the Biological Opinion or the groundfish Environmental Impact Statement. They maintained that designation of Critical Habitat was based on factors in addition to telemetry, and believed that it would not be useful to place RT members with competing views on a subcommittee to reinterpret earlier studies or decide which data were more important. If necessary, NMFS and ADF&G could be asked to provide a briefing on recent telemetry findings for the next meeting.

Payne suggested that recent telemetry data would be presented in the introductory sections of the RP, and the team should not engage in reanalysis of these data. He believed that the RT was struggling with the level of detail needed in the RP. Payne maintained that the RP is a planning document to identify needed analyses, and not the vehicle in which to perform those analyses. The most important RT discussions will involve development of a recovery strategy. On habitat in particular, Payne maintained that the RT should identify whether managers currently know enough about habitat issues or whether additional research is needed. RT recommendations would form the basis for future research. Payne suggested that he, Parker, and Frazer prepare a discussion draft of the habitat section within the narrative of the RP as an example of how much to include in other parts of the plan.

The RT generally believed that it was premature to start development of a recovery strategy at this time. There was consensus to slow down and concentrate on current tasks. The RT must reach agreement on the factors affecting the SSL population and the relative magnitude of each factor before it decides where to proceed from there. Some team members suggested, however, that it would be useful to review the stepdown outline of the previous RP to identify what had been learned since the previous experience and what data gaps must still be filled.

Small suggested that the RT begin by reviewing and revising the stepdown outline contained in the previous RP, thereby beginning to develop its own stepdown outline. By becoming familiar with the previous outline, the RT could begin to identify what has been done, what needs to be done, and what should be done next. Once those elements have been identified, individual team members could be tasked to further develop discussion drafts of specific sections. Since the stepdown outline is based on the yet-to-be-completed background sections, preparation of a draft outline at this stage does not preclude adding sections or deleting unnecessary ones at a later time.

After extended discussion, the RT arrived at the draft presented in Table 2. Small asked RT members to consider this outline as they review the draft background sections and prepare to expand the outline. The RT briefly discussed possible techniques that could be used by the group in this process.

The next meeting was tentatively scheduled for late May or early June if a quorum can be achieved. Small asked team members to provide blackout dates in that period for planning purposes. If that period is not feasible, the next potential period appears to be late July or early August.

Table 1. Attendance at the meeting of the Steller Sea Lion Recovery Team held March 21-22, 2002 at the Hotel Captain Cook, Anchorage, Alaska.

	Tammy Adams	National Marine Fisheries Service
	Russ Andrews	Alaska Sea Life Center
~	Shannon Atkinson	Alaska Sea Life Center
*	Linda Behnken	Alaska Longline Fishermen's Association
	John Bickham	Texas A&M University
*	Vernon Byrd	U.S. Fish & Wildlife Service
*	Don Calkins	Alaska Department of Fish and Game (retired)
*	Shane Capron	National Marine Fisheries Service
	Sam Cotton	Aleutians East Borough
†	Al Didier	Pacific States Marine Fisheries Commission
*	Doug Eggers	Alaska Department of Fish and Game
	Barbara Fosburg	National Marine Fisheries Service
*	Dave Frazier	Fisherman and NPFMC Advisory Panel
*	Lowell Fritz	National Marine Fisheries Service
*	Tom Gelatt	Alaska Department of Fish and Game
	Brandy Gerke	National Marine Fisheries Service
	Daniel Goodman	Montana State University
*	Dave Hanson	Pacific States Marine Fisheries Commission
*	Lianna Jack	Alaska Sea Otter and Steller Sea Lion Commission
	Lauri Jemison	Alaska Department of Fish and Game
	James King	Alaska Department of Fish and Game
*	Tom Loughlin	National Marine Fisheries Service
	Lloyd Lowry	US Marine Mammal Commission
	Jane Packard	Texas A&M University
*	Donna Parker	F/V Arctic Storm
	Mike Payne	National Marine Fisheries Service
*	Ken Pitcher	Alaska Department of Fish and Game
~	Robin Samuelson	Member, NPFMC
**	Bob Small	Alaska Department of Fish and Game
*	Alan Springer	University of Alaska, Fairbanks
	Beth Stewart	Aleutians East Borough
*	Ken Stump	
	Una Swain	Alaska Native Harbor Seal Commission
	Barbara Taylor	National Marine Fisheries Service
*	Andrew Trites	University of British Columbia & North Pacific Universities Marine Mammal Research Consortium
~	Terrie Williams	University of California, Santa Cruz
	Arliss Winship	University of British Columbia & North Pacific Universities Marine Mammal Research Consortium
*	Kate Wynne	University of Alaska, Kodiak

* Steller Sea Lion Recovery Team Member
~ Steller Sea Lion Recovery Team Member, absent
** Chair, Steller Sea Lion Recovery Team
† Rapporteur

Table 2. Draft step-down outline discussed by the SSLRT at its meeting on March 22 in Anchorage, AK.

<u>Research and Monitoring</u>

1. Identify habitat requirements
2. Identify population(s) structure
3. Monitor population(s) demography and distribution
4. Monitor health and condition
5. Determine cause and magnitude of mortality
6. Investigate foraging ecology and factors affecting energetics of SSL
7. Investigate prey availability
8. Investigate ecosystem

Management

1. Protect Critical Habitat and areas of special biological concern
2. Minimize "take" (to include disturbance and harassment)
3. Ensure adequate prey availability in feeding areas
4. Implement Section 119 of the MMPA
5. ESA administration (administer the recovery program)
6. International issues
7. Enforcement
8. Education and information programs

STELLER SEA LION RECOVERY TEAM

Draft Meeting Agenda
21-23 March 2002
Hotel Captain Cook
Anchorage, AK

Thursday, 21 March

1:00 pm

1. Review and approval of agenda
2. Approval of Jan 02 meeting minutes and Terms of Reference
3. Housekeeping: Meeting expenses, other?

1:30 pm

4. Overview of recovery units – Lianna Jack & Susan Pultz
5. Overview of population structure (i.e., stocks, DPS) relative to recovery plans – Barb Taylor, NMFS
6. SSL genetics research – John Bickham, Texas A&M and Barb Taylor, NMFS

3:30 pm

7. 'Recovery': definitions and implementation – Kate Wynne
8. Use of PVA in developing recovery criteria – Dan Goodman, Montana State

Friday, 22 March

8:00 am

9. Overview of recovery criteria – Subcommittee report
10. Review of 1997 SSL listing package – Shane Capron
11. Determine approach to estimate recovery criteria for revised SSL recovery plan

11:00 am

12. Progress on drafts of recovery plan sections III, IV, V.A-B and VI.A-B – Subcommittee report

12:00 pm – Lunch break

1:15 pm

13. Develop strategy for drafting recovery plan sections V.C-D and VI.C-D, VII, and VIII
    - Determine tasks/objectives of subcommittees
    - Determine subcommittee membership
    - Identify needs for expertise outside SSLRT
    - Identify need for recovery program reviews

4:30 pm

Determine dates of next meeting(s); adjourn